1. Scope of survey

This survey covers U.S. manufacturers of electric motors and generators (whether for shipment or for own use), including engine-driven generator sets. lt excludes rebuilt motors and generator repair, gearmotors, starter (cranking) motors and battery-charging alternators, arc-welding generators, generators for aircraft, and generators for spacecraft.

Internal combustion engines — If you manufacture engines and incorporate them into generator sets, the quantity of such engines should be reported in Section I, column 6 on Census Bureau Annual Form MA333L, "Internal Combustion Engines."

2. Figures to be reported

Companies with more than one establishment manufacturing products covered by this survey are requested to complete a separate report form for each location. lf you have not received a separate form for each of your establishments, please call the contact listed on the report form or write to the U.S. Census Bureau for additional forms.

Resales — Exclude data on products purchased by you for resale in the same condition, e.g. motors manufactured elsewhere (imported or domestic) but resold by you as either a stand alone sale or part of a system. However, if these resales are incorporated by you into generator sets, then the quantity and value of such sets should be reported in the shipments columns (1-4) in sections IV and V.

Refer to the Reference List to determine the proper item codes to use in reporting the motor you ship and/or incorporate (produce and consume). Report separately each product listed; do not combine product lines.

Section I — Report all motors and generators with National Electrical Manufacturers Association (NEMA) frame sizes of two digits or less regardless of hp rating. Where shown, report in two categories, one with output less than 1 hp (746 watts) and the other with 1 hp and greater. Exclude hermetic, deep well submersible, and other rotating equipment.

Section II — Report all motors and generators with NEMA frame sizes of three or more digits regardless of hp rating. Exclude hermetic, land transportation, deep well submersible, and other rotating equipment.

Section III — Report all motors and generators used in land transportation (as well as those used in associated control equipment) and parts thereof. See Section V for all other parts.

Section IV — Report prime mover (engine driven) generator sets, except steam and hydraulic turbine and electric motor driven (see Section V). Include gas turbine as well as wind-driven generator sets.

Section V — Report deep well submersible motors for use with water systems pumps to fit in well casings. Those with an output rating 1 hp or more should be reported by diameter (see Item 3, Definitions). Also, report electric motor-driven generator sets, other rotating equipment, and all parts for motors and generators (except those used in land transportation — see Section III).

(All hermetic motors should be reported under item codes 8563–8565).

Columnar structure

Columns 1 and 2; *Total shipments including interplant transfers* — Report in these columns the quantity and net selling value, f.o.b. plant, after discounts and allowances and do not include freight charges or excise taxes. Include all products made in this establishment which were physically shipped from this establishment during the year. Include products shipped on consignment whether or not sold at the end of the year. Deduct returned goods.

Columns 3 and 4; Transfers to other plants of your company — Report that portion of your shipments data in columns 1 and 2 that is transferred to other manufacturing plants of this company. Exclude transfers to separate sales branches, retail stores, or central warehouses of your company. Value should be the nearest approximation to the net selling value, f.o.b. plant, and not the cost of production.

Column 5; *Produced **and** incorporated in this plant (captive production)* — Report in this column the total quantity of each specified product which was made in this establishment during the year and used in further processing or fabrication, or incorporated into other products of this establishment (such as vacuum cleaners, fans, and garbage disposals). If a plant shipping generator sets also produces the generator used in the sets, the quantity of these incorporated generators should be reported in column 5 for that item while the sets themselves should appear in shipments columns 1-4 of Sections IV and V.

3. Definitions

Many of the descriptive terms appearing in the Reference List are defined according to standards developed by NEMA which are available from the National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209. The following definitions are provided for your convenience.

3. Definitions — Continued

a.c. — Alternating current

Brush — A conductor, usually composed in part of some form of carbon, serving to maintain an electric connection between stationary and moving parts of a motor or generator.

Brushless d.c. motor — A rotating self-synchronous machine with a permanent magnet rotor and with known rotor shaft positions for electronic commutation.

Capacitor start motor — A motor in which the capacitor phase is in the circuit only during the starting period. lt includes capacitor start/capacitor run with an additional capacitor in the run circuit.

Case — Outer covering or housing

Commutate — To reverse every other half cycle of an alternating current so as to form a unidirectional current.

Commutator — A cylindrical ring or disc assembly of conducting members, individually insulated in a supporting structure, with an exposed surface for contact with a current collecting device.

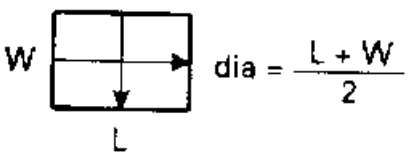
Compound-wound motor — A d.c. motor which has two separate field windings — one, usually the predominating field, connected as in a straight shunt wound motor, and pseries with the other connected in series with the armature circuit.

Conventional type shaded-pole motor — A single-phase induction motor provided with an auxiliary short-circuited winding or windings displaced in magnetic position from the main winding.

Converter — A machine or device for changing alternating-current power to direct-current power or vice-versa, or from one frequency to another. See inverter.

d.c. — Direct current

Diameter — For this report, diameter refers to the stator diameter including frame, shell, or case, if so designed. Some configurations have no diameter, in which case, an estimate or rough approximation should be used. For example:



Dynamotor — A converter that combines both motor generator action with one magnetic field and with two armatures, or with one armature having separate windings. See synchronous converter.

Efficiency — The efficiency of a motor or generator is the ratio of its useful power output to its total power input and is usually expressed in percentage. See energy efficient motor.

Electronically commutated — A motor with a rotor position feedback device, or a motor utilizing other means such as back EMF sensing, so the power to the field (stator) windings can be controlled relative to the instantaneous rotor position. Included are polyphase induction servo, brushless d.c., and switched reluctance motors.

Energy efficient motor — A polyphase squirrel-cage induction motor shall be classified as “energy efficient” when the nominal full-load efficiency is determined in accordance with NEMA Standards publication MGI–1987, *Motors and Generators*, paragraph MGI–12.54.1 and identified on the nameplate in accordance with paragraph MGI–12.54.2 and shall equal or exceed the values listed in MGI Table 12–6B.

Fractional hp — An output rating of one-tenth hp to less than one hp. See hp.

Frequency changer — A motor-driven generator set that changes the power of an a.c. system from one frequency to one or more different frequencies, with or without a change in the number of phases, or in voltage.

Fs (frame size) — Machines identified by frame size should be classified according to ANSI/NEMA Standard MGI – 1987 Motors and Generators. In general, fs is a designation established to facilitate the matchup between a motor or generator and its driver equipment and is a function of the distance from the centerline of the shaft to the bottom of the feet on foot mounted machines.

Generator — A machine that converts mechanical power into electrical power.

Hermetic motor — A stator and rotor without shaft, end shields, or bearings for installation in refrigeration compressors of the hermetically sealed type.

Hp (horsepower) — An output rating based on 4-pole, open type frame, at a speed of 1800 r.p.m., and generally with a case diameter of less than 6" for ratings under one hp (fractional) and 6" or more for rating of one or more hp (integral). One hp equals 746 watts.

3. Definitions — Continued

Induction generator — A rotating electrical machine, when driven above synchronous speed by an external source of mechanical power, is used to convert mechanical power to electric power.

Induction motor — A rotating electrical machine, which a primary winding on one member (usually the stator) is connected to the power source and a polyphase secondary winding or a squirrel-cage secondary winding on the other member (usually the rotor) carries induced current.

Integral hp — Output rating of one hp or more. See hp.

Inverter — A machine, device, or system that changes direct-current power to alternating-current power. See converter.

kVA — Thousand volt/amperes — equivalent to kW for d.c. equipment. For a.c. equipment, a power factor must be applied to convert to kW. See PF.

kW (kilowatt) — Thousand watts. One watt equals 1/76 hp.

Lamination — A relatively thin member, usually made of sheet material. A complete structure is made by assembling the laminations in the required number of layers. In a core that carries alternating magnetic flux, the core material is usually laminated to reduce eddy-current losses.

Mechanically commutated — A motor or generator that uses mechanical means such as brushes to send power to the windings.

Mhp (millihorsepower) — An output rating of less than one-thousandth of one hp. See hp.

Micromotors — Extremely small motors (typically used in robotics) whose output is measured in mhp.

Millihorsepower — See mhp.

Motor electric — A machine that converts electric power into mechanical power.

Non-commutated — A motor or generator that uses alternating current.

Non-servo — A motor or generator not made to be used in a servomechanism.

Permanent magnet field d.c. motor — A machine in which the field excitation is supplied by permanent magnets.

Permanent magnet synchronous motor — A machine in which the rotor consists of one or more permanent magnets.

Permanent-split capacitor motor — A machine having the same value of capacitance for both starting and running conditions.

PF — Power factor; a function of working temperature, type of current, and the specifications of the equipment. For the sake of convenience, when converting from kVA to kW the PF for single-phase equipment is rated at unity (1.0), and for three-phase equipment it is rated at 0.8.

Pole — That portion of the device associated exclusively with one electrically separated conducting path of the main circuit of the device.

Polyphase induction (servo) — A motor similar to a non-servo motor but with the addition of a rotor position feedback device, for use with a servodriver.

Polyphase induction — This is an a.c. polyphase induction motor or generator with a squirrel cage. They are rotating electrical machines that utilize or generate polyphase a.c. power. They are usually 3-phase machines with three voltages displaced 120 electrical degrees with respect to each other.

Reluctance motor — Construction to an induction motor, in which the member carrying the secondary circuit has salient poles, without permanent magnets or d.c. excitation. It starts as an induction motor, is normally provided with a squirrel-cage winding but operates normally at synchronous speed.

Resolver — A device whose input is a vector quantity and whose outputs are components of the vector. Used as a computing element for vector composition and resolution.

Rotating equipment — A feedback control system that includes one or more electric machines and the associated control.

Rotor — Sometimes called an armature. It is the motor's rotating member including the shaft.

Separately excited motor — A machine for which excitation is obtained from a source other than the motor itself.

Series-wound motor — A machine for which the field circuit and armature circuit are connected in series.

3. Definitions — Continued

Servodriver — This device is part of the closed-loop motor/driver system and provides feedback control the purpose of which is to achieve prescribed relationships between selected system variables (at least one of which represents mechanical motion) by comparing functions of these variables and using the comparisons to effect control.

Servomechanism — See servodriver.

Shaded-pole — Single-phase induction with a main winding and one or more short-circuited windings displaced in magnetic position from the main winding.

Shunt-wound motor — A d.c. motor in which the field circuit is connected either in parallel with the armature circuit or to a separate source of excitation voltage.

Single-phase motor — A motor that converts single-phase a.c. power into mechanical power, or that provides mechanical force or torque.

Skeleton type shaded-pole motor — Electrically the same as a conventional type shaded-pole motor but whose stator frame consists of a simple structure that clamps the core but does not enclose it. Normally this type has two bearings mounted in a metal strip rather than a conventional end shield.

Sleeve — A tubular part designed to fit around another part.

Split-phase motor — A single-phase induction motor having a main winding and an auxiliary winding, designed to operate with no external impedance in either winding. The auxiliary winding is energized only during the starting operation of the auxiliary-winding circuits and is open-circuited during running operation.

Squirrel-cage induction machine — A motor or generator in which the secondary circuit consists of a squirrel-cage winding suitably disposed in slots in the secondary core and with the winding consisting of a number of conducting bars having their extremities connected by metal rings or plates at each end.

Stabilized shunt-wound motor — A d.c. motor in which the shunt field circuit is connected either in parallel with the armature circuit or to a separate source of excitation voltage and which also has light series winding added to prevent a rise in speed or to obtain a slight reduction in speed with increase in load.

Stator — The supports and stationary portions of the magnetic circuit, associated winding, and leads of a motor.

Step angle — The separation in degrees between two magnets of a stepper motor — a permanent magnet repels an electro-magnet when an electric current is sent through the electromagnet. The greater the angle of separation the smaller the torque about the shaft of the electromagnet.

Stepper motor — A polyphase synchronous motor, the rotor of which rotates in discrete angular increments when the stator windings thereof are energized in a programmed manner either by appropriately timed direct current or by a polyphase a.c. Rotation occurs because of the magnetic interaction between the rotor poles and the poles of the sequentially energized stator phases.

Stepping devices — Used to convert electrical impulses into discrete mechanical movements. See stepper motor and synchronous stepper motor.

Straight shunt-wound motor — A d.c. motor in which the field circuit is connected either in parallel with the armature circuit or to a separate source of excitation voltage. The shunt field is the only winding supplying field excitation.

Subfractional — An output rating of one-thousandth hp to less than one-tenth hp. See hp.

Submersible motor — Motor designed for operation while totally submerged in water no warmer than 25 degrees C (77 deg F).

Synchronous converter — Combines both motor and generator action in one armature winding and is excited by one magnetic field. It is normally used to change a.c. power to d.c. power. See dynamotor and converter.

Synchronous motor — An a.c. polyphase motor or generator similar to induction but with a rotor which follows the rotating field in synchronous (exact) speed.

Synchronous stepper motor — A polyphase synchronous motor, the rotor of which rotates continuously in discrete angular increments when the stator windings thereof are energized by a polyphase a.c.

Torque — A force that produces or tends to produce rotation. See torque motors.

Torque motor — A torque motor is a motor rated for operation at stand still.

Universal motor — A series-wound motor designed to operate at approximately the same speed and output on either d.c. or single-phase a.c. of a frequency not greater than 60 Hertz and approximately the same root-mean-square voltage.

3. Definitions — Continued

Wound field d.c. motor — A d.c. motor incorporating an armature winding connected to a commutator and magnetic poles which are excited from a d.c. source. These motors are of three general types: shunt-wound, series-wound, and compound-wound.

Wound-rotor induction machine — A motor or generator in which the secondary circuit consists of a polyphase winding or coils whose terminals are either short-circuited or closed through suitable circuits.

4. Comparability

If you also report in the Annual Survey of Manufactures (Form MA-10000), the sum of values for item codes shown in column (a) should correspond to the dollar values reported under product class codes indicated in column (b) below:

Current Industrial Reports Form MA335H) Item codes (a)	Annual Survey of Manufactures Product class codes (b)
1015–2087, 2413-2421, 2425, 2428, 2615-2641, 2841-2844, 2847, 2860-2916, 4206, 4314	3353121
2090, 2423, 2427, 2429, 2643, 2845, 2848, 4204, 4208, 4315-4329, 4353-4396, 4601-4604	3353123
5310	3353125
7402–7478	3353127
8514, 8563, and 8587	3353129
8516, 8565, and 8589	335312A
8590–8595	335312C
9001	335312E

FORM **MA335H** — **MOTORS AND GENERATORS**

Product code	Item code	Item description
		SECTION I — MOTORS AND GENERATORS (2–DIGIT FRAME SIZES) WITH AN OUTPUT RATING OF LESS THAN 746 WATTS (FRACTIONAL HORSEPOWER), EXCLUDING DEEP WELL SUBMERSIBLES, HERMETICS (which are reported under item codes 8563 and 8565).
3353121101	**1015**	Used in automobile accessories (such as heaters, convertible tops, automatic windows, etc; exclude starter motors and generators), include a.c. and d.c.
		Used in aircraft and spacecraft (exclude generators);
3353121104	**1030**	a.c.
3353121107	**1040**	d.c.
3353121111	**1058**	Used in toys (all sizes) and clock type synch and subsynch timing. a.c. and d.c.
		All other uses:
		A.c. (noncommutated):
		Single phase:
3353121112	**2060**	Skeleton type shaded pole (use diameter at widest part)
		Conventional type shaded pole:
3353121119	**2063**	Less than 2.5" diameter:
		2.5 to less than 3.75" diameter:
3353121122	**2064**	2 pole
3353121126	**2067**	4 pole and over
3353121131	**2068**	3.75 to less than 4.375" diameter
3353121133	**2069**	4.375" and over
		Permanent split capacitor:
		Less than 3.75" diameter:
3353121145	**2077**	2 pole
3353121148	**2078**	4 pole and over
3353121151	**2079**	3.75 to less than 4.375" diameter
		4.375" to less than 5.375" diameter:
3353121162	**2083**	2 pole and 4 pole
3353121167	**2086**	6 pole and over
		5.375" and over:
3353121172	**2087**	Less than 746w, under 1 hp (2 digit fs)
3353123105	**2090**	746w, and over, 1 hp and over (2 digit fs)
		Capacitor start:
3353121181	**2413**	Less than 4.375" diameter
3353121182	**2415**	4.375 to less than 5.375" diameter
		5.375" diameter and over:
3353121186	**2421**	Less than 746w, under 1 hp (2 digit fs)
3353123113	**2423**	746w and over, 1 hp and over (2 digit fs)
		Split phase:
3353121192	**2425**	Less than 746w, under 1 hp (2 digit fs)
3353123123	**2427**	746w and over, 1 hp and over (2 digit fs)
		NOTE: See DEFINITIONS AND SPECIAL INSTRUCTIONS, item 3, for the treatment of "diameter" in this survey.

FORM **MA335H**

Product code	Item code	Item description
		SECTION I — MOTORS AND GENERATORS (2–DIGIT FRAME SIZES) WITH AN OUTPUT RATING OF LESS THAN 746 WATTS (FRACTIONAL HORSEPOWER), EXCLUDING DEEP WELL SUBMERSIBLES, HERMETICS (which are reported under items 8563 and 8565) — Continued
		All other uses — Continued
		A.c. (noncommutated) — Continued
		All other single phase:
3353121195	**2428**	Less than 746w, under 1 hp (2 digit fs)
3353123127	**2429**	746w and over, 1 hp and over (2 digit fs)
		Polyphase (servo and nonservo):
33531211B1	**2615**	Synchronous stepper motors
		All other polyphase:
3353121198	**2641**	Less than 746w, under 1 hp (2 digit fs)
3353123129	**2643**	746w and over, 1 hp and over (over 2 digit fs)
XXX	**2699**	**Total a.c. (noncommutated) and a.c./d.c. fractional horsepower motors and generators for item codes 1015–2643)**
		A.c. (Commutated)
		Mechanically commutated (brushes, for example):
		Cased or sleeved:
33531211C7	**2841**	Less than 2.875" diameter
33531211E1	**2842**	2.875 to less than 3.188" diameter
33531211E4	**2843**	3.188 to less than 3.563" diameter
		3.563" diameter and over:
33531211E7	**2844**	Less than 746w, under 1 hp (2 digit fs)
3353123134	**2845**	746w and over, 1 hp and over (2 digit fs)
		Uncased:
33531211G5	**2847**	Less than 746w, under 1 hp (2 digit fs)
3353123138	**2848**	746w and over, 1 hp and over (2 digit fs)
XXX	**2858**	**Total a.c. (commutated) fractional horsepower motors and generators for item codes 2841–2848**
		D.c. or universal
		Permanent magnet (brushless):
		Servo:
33531211G7	**2860**	Less than 4" diameter
33531211H1	**2863**	4" diameter and over
		Non-servo:
33531211H4	**2867**	Less than 4" diameter
33531211H7	**2869**	4" diameter and over
33531211J1	**2870**	Wound field NOTE:
		See DEFINITIONS AND SPECIAL INSTRUCTIONS, item 3, for the treatment of “diameter ” in the survey

FORM **MA335H**

Product code	Item code	Item description
		SECTION I — MOTORS AND GENERATORS (2–DIGIT FRAME SIZES) WITH AN OUTPUT RATING OF LESS THAN 746 WATTS (FRACTIONAL HORSEPOWER), EXCLUDING DEEP WELL SUBMERSIBLES, HERMETICS (which are reported under item codes 8563 and 8565) — Continued
		All other uses — Continued
33531211J4	**2900**	Electronically commutated: Stepper *(see item code 2615 for a.c.)*
		All other:
33531211J7	**2910**	Servo
33531211K1	**2916**	Non-servo
XXX	**2950**	**Total d.c. or universal (commutated) fractional horsepower motors and generators for item codes 2860–2916**
		NOTE: See DEFINITIONS AND SPECIAL INSTRUCTIONS, item 3, for the treatment of "diameter " in the survey.
		SECTION II — MOTORS AND GENERATORS, 3--DIGIT FRAME SIZES AND ABOVE, WITH AN OUTPUT RATING OF 746 WATTS OR MORE (INTEGRAL HORSEPOWER), EXCLUDING LAND TRANSPORTATION, HERMETICS, DEEP WELL SUBMERSIBLES, OTHER ROTATING EQUIPMENT
3353123101	**4204**	Used in aircraft and spacecraft (exclude generators)
		All other uses:
		A.c. (non-commutated):
		Motors:
		Single phase:
33531211K4	**4206**	<746w, under 1 hp (3-digit fs)
3353123141	**4208**	746w and over, 1 hp and over (3-digit fs)
		Polyphase induction (exclude synchronous):
		All motors, including Energy Efficient (EE):
33531211K7	**4314**	<0.746w, < 1 hp (3-digit fs)
3353123143	**4315**	0.746 < 3.731kW, 1 through 5 hp (report EE here and in item code 4339)
3353123146	**4316**	3.731 < 14.921kW, >5 through 20 hp (report EE here and in item code 4340)
3353123149	**4317**	14.921 < 37.301kW, >20 through 50 hp (report EE here and in item code 4349)
3353123152	**4318**	37.301 < 74.601kW, >50 through 100 hp (report EE here and in item code 4350)
3353123155	**4319**	74.601 < 149.201kW, >100 through 200 hp (report EE here and in item code 4351)
3353123158	**4320**	149.201 < 373.001kW, >200 through 500 hp
3353123161	**4327**	373.001 < 746.001kW, >500 through 1,000 hp
3353123164	**4328**	746.001 < 1865.001kW, >1,000 through 2,500 hp
3353123167	**4329**	1,865.001kW and over, >2,500 hp
XXX	**4335**	**Total, polyphase induction motor *(Sum of item codes 4314–4329)***

FORM **MA335H**

Product code	Item code	Item description
		SECTION II — MOTORS AND GENERATORS, 3 DIGIT FRAME SIZES AND ABOVE, WITH AN OUTPUT RATING OF 746 WATTS OR MORE (INTEGRAL HORSEPOWER), EXCLUDING LAND TRANSPORTATION, HERMETICS, DEEP WELL SUBMERSIBLES, OTHER ROTATING EQUIPMENT — Continued
		Energy Efficient motors (included in 4315-4319; the sum of 4339–4351 must be *less than* or *equal to* the sum of 4315–4319). This is a subset of motors above:
33531231E1	**4339**	0.746 < 3.371kW, 1 through 5 hp (include in item code 4315)
33531231E3	**4340**	3.371 < 14.921kW, >5 through 20 hp (include in item code 4316)
33531231E5	**4349**	14.921 < 37.301kW, >20 through 50 hp (include in item code 4317)
33531231E7	**4350**	37.301 < 74.601kW, >50 through 100 hp (include in item code 4318)
33531231E9	**4351**	74.601 < 149.201kW, >100 through 200 hp (include in item code 4319)
3353123185	**4353**	Synchronous (servo and non-servo)
		A.c. generators (for internal combustion engines):
3353123189	**4382**	< 15kVA
3353123198	**4393**	15 < 375kVA
33531231A1	**4395**	375 < 750kVA
33531231A4	**4396**	750kVA and over
XXX	**4399**	**Total, engine-driven a.c. generators *(Sum of item codes 4382–4396)***
		D.c. motors and generators (exclude all arc welding and battery charging generators for internal combustion engines):
33531231A7	**4601**	0.746 < 3.375kW, 1 through 5 hp
33531231B1	**4602**	3.375 < 74.601kW, >5 through 100 hp
33531231B4	**4604**	74.601kW and over, >100 hp
XXX	**4699**	**Total, industrial d.c. motors and generators *(Sum of item codes 4601–4604)***
		SECTION III — MOTORS AND GENERATORS FOR LAND TRANSPORTATION (INCLUDING THOSE USED IN ASSOCIATED CONTROL EQUIPMENT)
3353125100	**5310**	Motors and generators for land transportation
		SECTION IV — PRIME MOVER GENERATOR SETS, EXCEPT STEAM OR HYDRAULIC TURBINE AND ELECTRIC MOTOR-DRIVEN (SEE SECTION V)
		Gas/gasoline engine-driven (generator sets, a.c. and d.c. output)
3353127103	**7402**	< 5kW
3353127107	**7405**	5 < 15kW
3353127111	**7407**	15 < 50kW
3353127113	**7409**	50 < 100kW
3353127117	**7411**	100kW and over

FORM **MA335H**

Product code	Item code	Item description
		SECTION IV — PRIME MOVER GENERATOR SETS, EXCEPT STEAM OR HYDRAULIC TURBINE AND ELECTRIC MOTOR-DRIVEN (SEE SECTION V) — Continued
		Diesel engine-driven generator sets, a.c. and d.c. output:
3353127125	**7416**	< 15kW
3353127128	**7421**	15 < 50kW
3353127131	**7423**	50 <1 00kW
3353127134	**7425**	100 < 200kW
3353127137	**7427**	200 < 400kW
3353127141	**7429**	400 < 600kW
3353127143	**7430**	600 < 800kW
3353127146	**7433**	800 < 1,000kW
3353127149	**7435**	1,000 < 2,000kW
3353127151	**7438**	2,000kW and over
9993336110	**7452**	Gas turbine-driven generator sets (all sizes)
3353127165	**7478**	Other generator set units including dual fuel (oil and gas) engine-driven generator sets and a.c./d.c. output, excluding electric motor-driven generator sets (see Section V)
XXX	**7999**	**Total, prime mover generator sets *(Sum of item codes 7402–7478)***
		SECTION V — ELECTRIC MOTOR-DRIVEN GENERATOR SETS, OTHER ROTATING EQUIPMENT, AND PARTS FOR MOTORS AND GENERATORS
		Electric motor-driven generator sets (include dynamotors, converters, inverters, and frequency changers):
3353129103	**8514**	Less than 746w a.c. and d.c. output rating
335312A103	**8516**	746w or more a.c. and d.c. output rating
		All hermetic motors:
3353129111	**8563**	5.5" stator core diameters and smaller
335312A111	**8565**	Over 5.5” stator core diameter
		All other rotating equipment (including rate generators, resolvers, and synchro-type components):
3353129114	**8587**	Rated at less than 746w
335312A114	**8589**	Rated at 746w or more
		Parts for motors and generators regardless of output rating:
335312C101	**8590**	Commutators
335312C104	**8591**	Land transportation
335312C107	**8595**	All other parts
XXX	**8999**	**Total, electric motor-driven generator sets, other rotating equipment, and parts *(Sum of item codes 8514–8595)***
		SECTION VI — MISCELLANEOUS ACTIVITIES
335312E100	**9001**	Armature rewinding on a factory basis (by remanufacture)
9999769410	**9005**	Custom repair shop rewinding of armatures
9999769411	**9007**	Electric motor repair